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which is incorporated The Institution of Aeronautical Engineers

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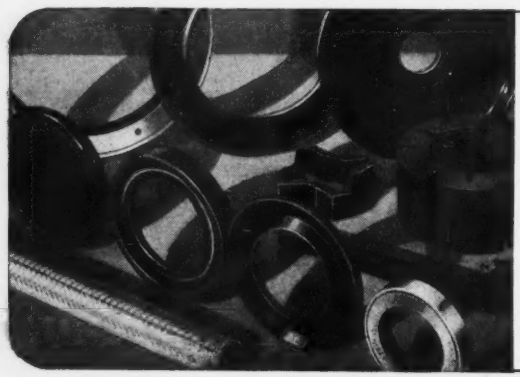

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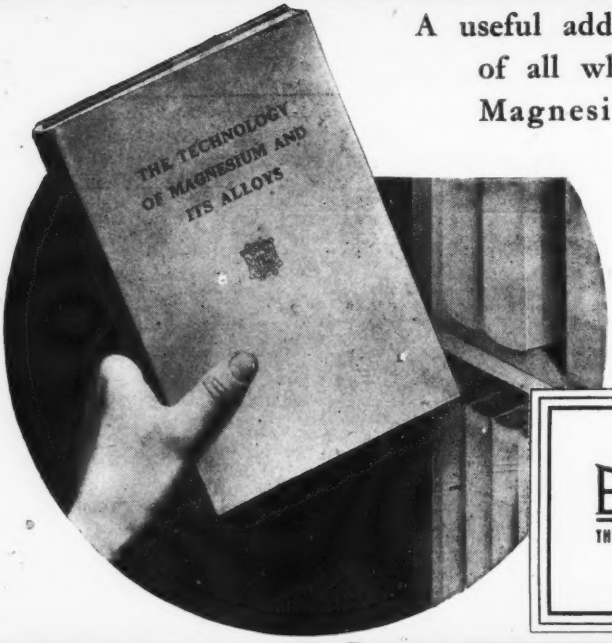

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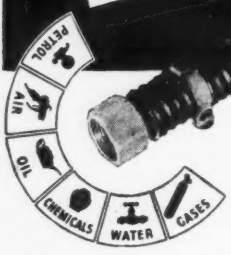

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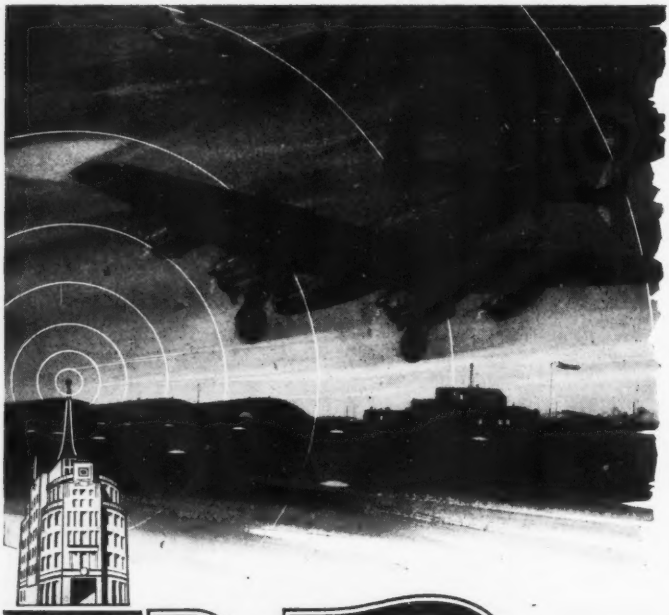

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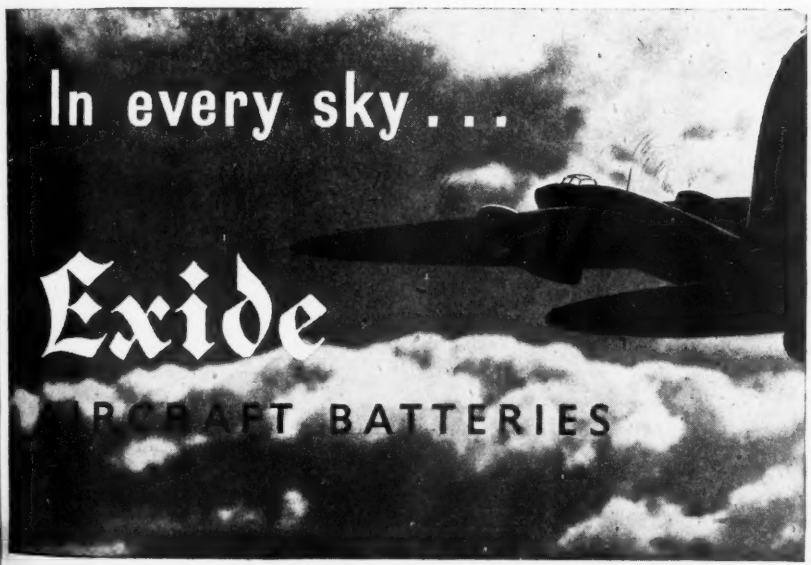

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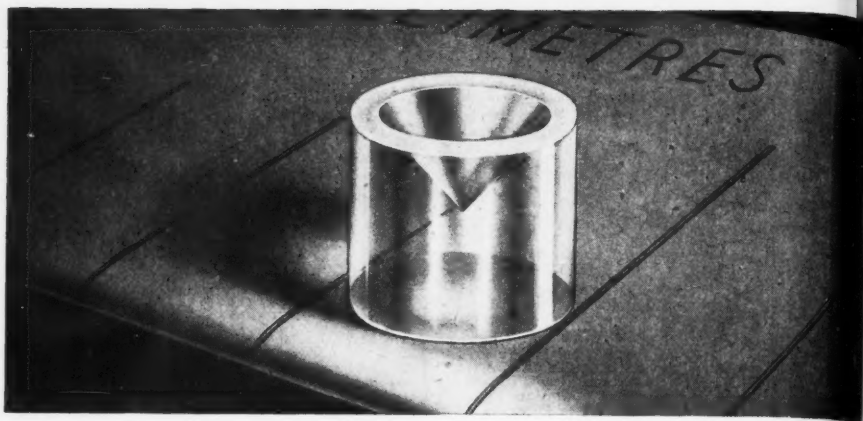

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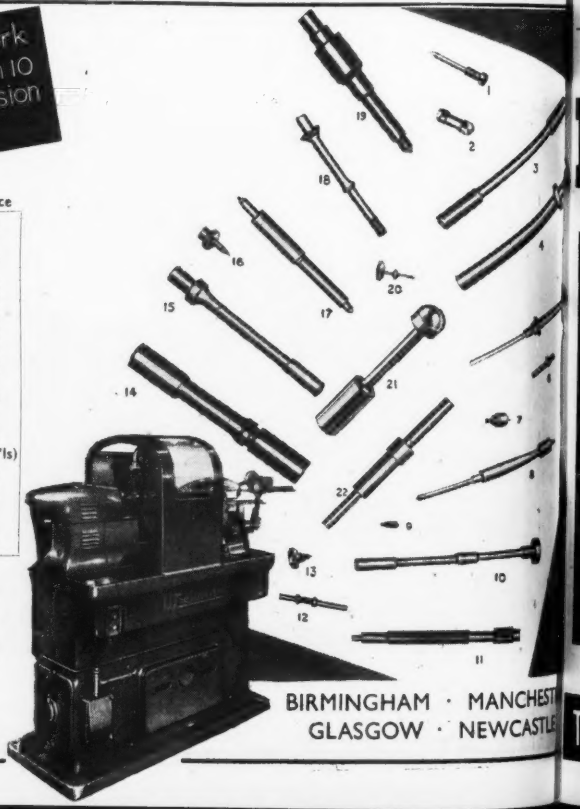

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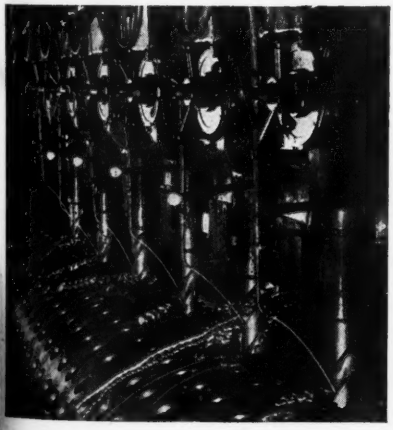

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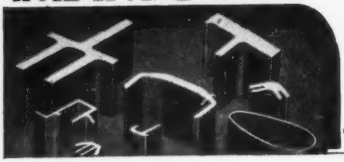

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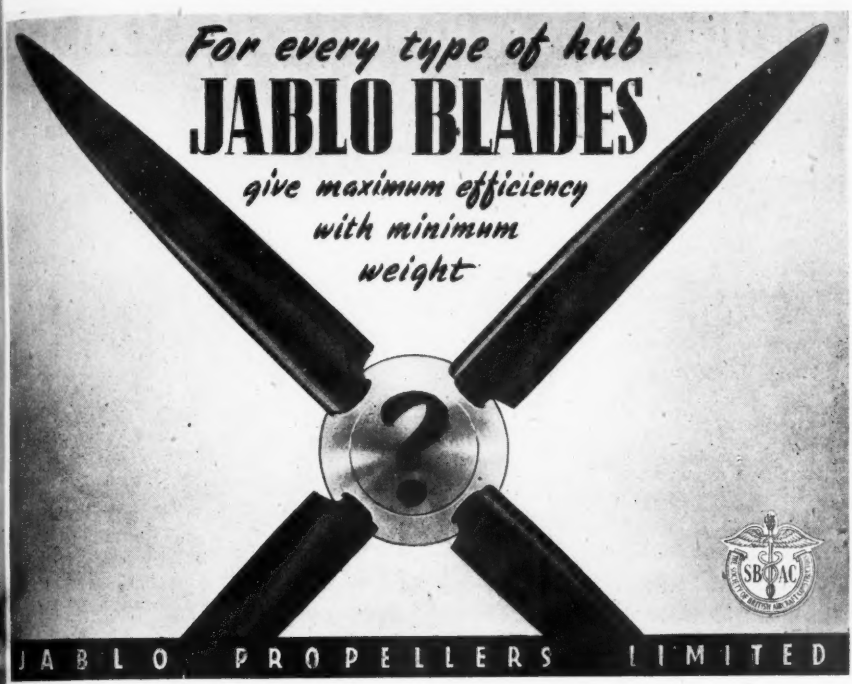

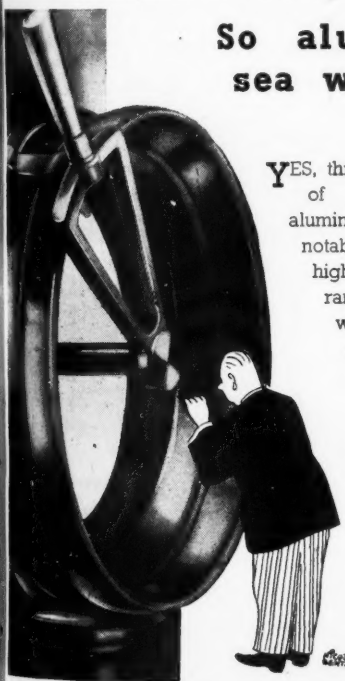

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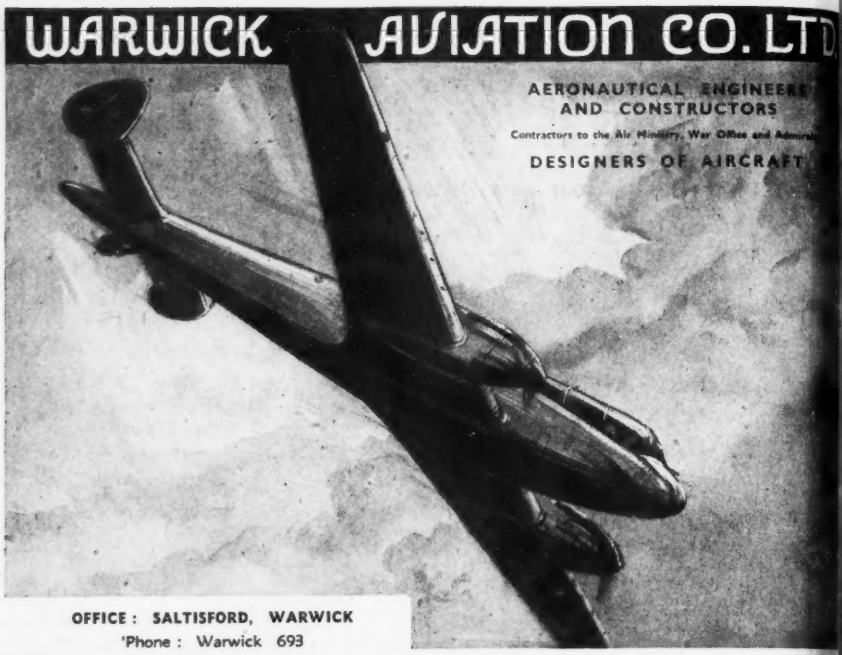
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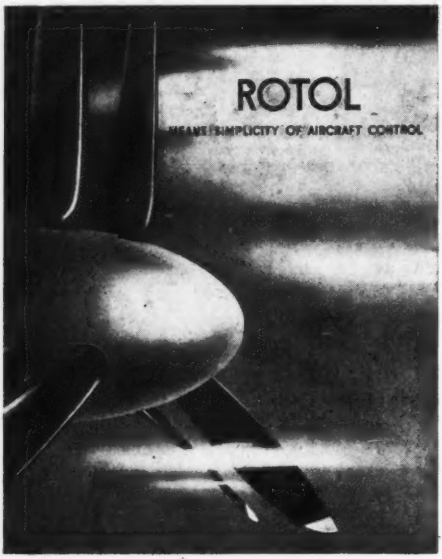

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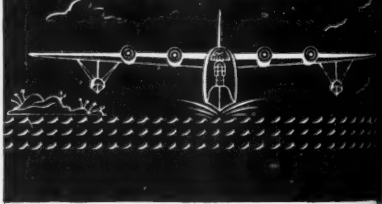

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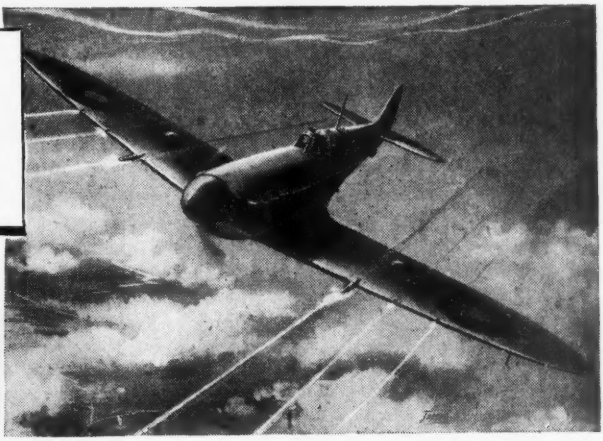

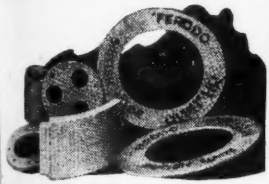

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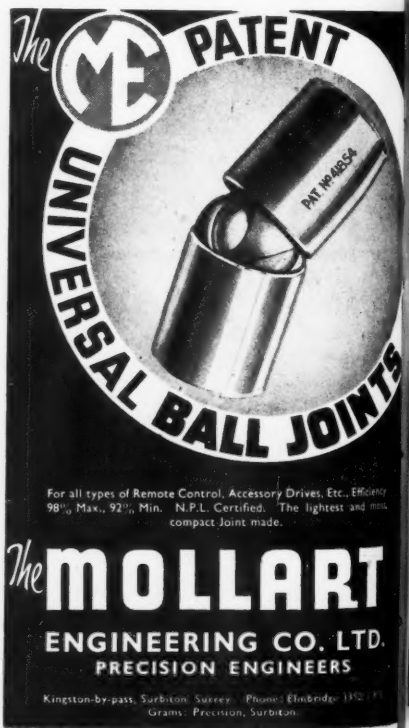
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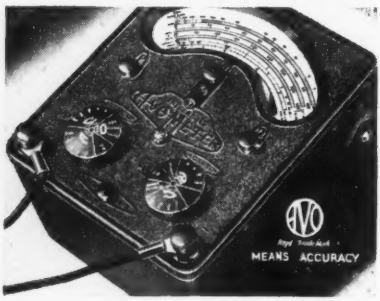

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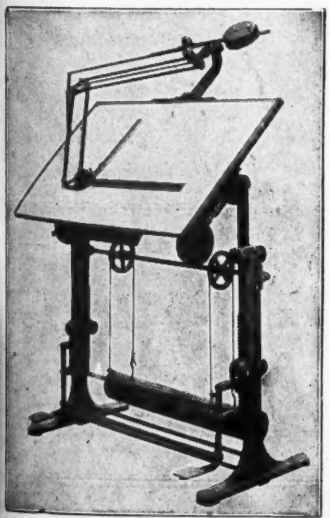

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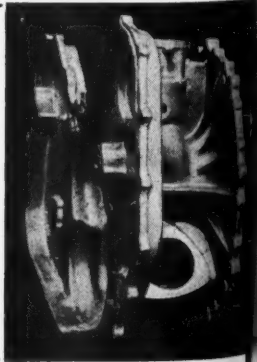

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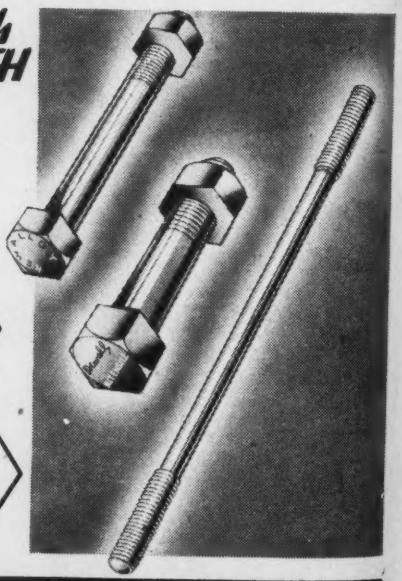

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MONTHLY NOTICES

APRIL, 1944.

Wilbur Wright Memorial Lecture.

The 32nd Wilbur Wright Memorial Lecture will be read on Thursday, May 25th, 1944, at 6.30 p.m., by Sir A. H. Roy Fedden, M.B.E., F.R.Ae.S., on "Power Plants—Past and Future." The Lecture will be held at the Institution of Mechanical Engineers, Storey's Gate, St. James's, S.W.1 (by kind permission of the Council of the Institution). Light refreshments will be served before the meeting.

Members of Council.

The following is the list of Council. Those marked * were elected at the Annual General Meeting on March 27th, 1944. The President and Vice-Presidents are elected at the April or May meeting of Council and take office on October 1st in each year:—

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Fellows.

The following were passed by the Council during the year for Fellowship and their elections announced at the Annual General Meeting on March 27th, 1944, in accordance with Rule 4:—

Ralph Harrison Archbald, Ernest Leon Bass, Ivor Bowen, Miss Frances B. Bradfield, A./Cmdre. Vernon S. Brown, Harry Cantrill, Roland Henry Chaplin, Arthur Roderick Collar, Hayne Constant, Philip Andrew Cooke, Lawrence Percival Coombes, Harold Leslie Cox, Graham Richard Dawbarn, Hugh Latimer Dryden, Hugh Arthur Francis, Ernest Turner Jones, Roy Patterson Key, Robert Lang Lickley, Claude Percival Thomas Lipscomb, Benny Lockspeiser, John W. Maccoll, Group Captain John Francis Xavier McKenna, Harry Lawley Milner, John Lankester Parker, William George Arthur Perring, William Edward Willoughby Petter, William Eliezer Prytherch, Alfred Grenvile Pugsley, John Edwin Ramsbottom, Julius Ratzerdorfer, Seymour Cunningham Redshaw, Andrew Alexander Ross, Arthur Alexander Rubbra, Trevor Prince Searight, Leonard Frederick George Simmons, Tom Roberts Thomas, Ernest John Dennis Townesend, Oliver Thornycroft, Cyril Frank Uwins, Frank Whittle, Herbert Frank Winny, Stephen Joseph Zand.

Graduates' and Students' Section.

The following Lectures have been arranged by the Graduates' and Students' Section. They will be delivered in the Library, at 4, Hamilton Place, W.1, at 7.30 p.m.:—

Thursday, April 6th.—Mr. P. G. Masefield, M.A., A.F.R.Ae.S., on "American Aircraft."

Wednesday, April 19th.—Mr. A. J. Penn, on "The Design and Operation of Superchargers."

Thursday, May 11th.—Mr. J. A. Churchill, on "Power Plant Installation and Design."

Graduates and Students are also invited to a Lecture before the Graduates' Branch of the Institution of Automobile Engineers, 12, Hobart Place, S.W.1, as follows:—

Sunday, April 16th, 3.0 p.m.—Informal talk by Mr. C. Kimber, on "The Sports Car—Its Past and Future."

Branch Lectures.

The following Lecture has been arranged before the Luton Branch:—

Wednesday, May 3rd, 7.15 p.m.—Mr. C. G. Grey, on "Debunking Aeronautical Science."

Election of Members.

The following members have recently been elected:—

Associate Fellows.—Alan Geoffrey Cooper (from Graduate), Robert William Fowler, Ian Malcolm Hamer (from Graduate), Donald Campbell MacPhail (from Graduate), Oldrich Mayer, Harold Moon (from Graduate), Alan Richard Brine Nash (from Student), Brenda Mary Rimmer (from Student), Henry Roberts (from Student), Alan Bryce Robertson (from Associate), Kiran Kumar Roy (from Graduate), Gajraj Bahandur Saksena, Herbert Walter Sidwell, Frank Smith, Alfred Stanley Taylor (from Graduate), Victor James Waghorn, Ronald Bartlett Wilkinson (from Student).

Associates.—John Austin, Edward Geoffrey Barnes (from Student), Peter Blandford, Albert Brear, Frederick Stephen Alfred Brett, Ray Miller Brown (from Graduate), Leonard Crompton, Reginald

Charles Ellis, Cyril Evans, Francis Anthony Famfule, Albert Lyttelton Gilmore, Cecil Vernon Haworth, Norman John Howard, Fred Victor Huntley, George Henry Huntley, Zygmunt Stanislaw Ipohorski-Lenkiewicz, John Jacques Kaye (from Companion), James McEwan King, Sydney Charles Ladyman, Herbert Horace Lee, Joseph Lloyd, Norman Alfred Harold Luke, William Angus Millard, Francis Patrick Moran, Laurence Hugh Niall, Ronald Arthur Godwin Nierop, Herbert James Oates, William George Oliver, Richard Clarence Paget, Albert Peters, John Reid Pettigrew, Frederick William Pickles, John Walter Piggott, Alfred Percy Rudolf Pihlens, Geoffrey John Powter, Bert Pringle, Archie Roe, Richard Charles George Thomas Rogers (from Student), John Joseph Roitt, Felix Bowker Schofield (from Graduate), Maurice Armstrong Smith (from Student), Neville Swinton, Sydney Alfred Tennant (from Associate), Leslie Goodridge Tottle, Reginald George Thompson, Joseph Edward Watts, Sidney Thomas Weedon, Jack Edbury Willies, Leslie C. Wood, Mansel Williams, Frederick Charles Woolley.

Graduates.—William Frank Bratley, William Robert Bruce, Ronald Dimberline (from Student), Ronald Fowkes, Robert Malcolm Hay (from Student), George Alec Jones, Ronald Leslie Jopson, Clifford Kell (from Student), Edwin John Ewart Newman (from Student), Henry Edmund North, Keith Robert Obee (from Student), James Frederick Hiley Peel, Albert William Prouse, John Procter Rayner (from Student), Ronald Riley, Theodore Clemens Sidwell, Norman Fred. Simmonds (from Student), Peter Hayward Wall (from Student), William Albert John Wall, Thomas Albert Wels.

Students.—Montague Ewart Alford, Ronald Desmond Anthony, Ian James Alexander Brown, Felix Mornington Graham Cadie, Ruthven Lamble Carstairs, Donald Crilly, Frank Thomas Davies, Thomas Reginald Floate, John Roland Fox, Alfred William Raymond Gilchrist, Robert Peter Grimwood, Stanley Kenneth Harley, Ronald Bertram Hawkes, John Houghton, Reginald Eric Hooson, Pearey Sal Jain, Robert Jackson, Sidney Harrison Johnstone, James Kennedy, Herbert Liebermann, Patrick Lionel McMullen, David Phillip Middlemiss, Derek Moore, Donald Jesse Pitts, Douglas Arthur Pelling, Michael John Rant, Victor Alfred Baden Rogers, Brian Spencer Soan, Francis Ion Tallentire, Oswald Peter Trubshawe, Michael Rex Vivian, Leslie Norman West, James Robert Morgan Williams, Peter Yule, Edward Charles Zwartouw.

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Associate Fellowship Examinations.

The next Associate Fellowship Examination will be held on Tuesday, May 16th, and Wednesday, May 17th, 1944. Full particulars will be sent direct to candidates who have entered for the examination.

Acknowledgments.

The Council acknowledge with grateful thanks the gift of back numbers of the Journal from Mr. W. G. Gould, Associate Fellow.

Additions to the Library.

The following books have been added to the Library during March:—

Pamphlets in italics with location reference following in brackets.

C.f.27.—Parachutes in Peace and War. Prof. A. M. Low. Scientific Book Club. 1942.

D.b.200.—*The Post-War Outlook for Aviation. Wayne W. Parrish. (Address to Annual Meeting of Air Industries and Transport Association, Canada, Nov. 15th, 1943.)* (PD.1/25.)

D.b.201.—Civil Aviation. Michael Young. ("Target for To-morrow," Series, No. 7.) The Pilot Press. 1944. 4/6.

D.f.42.—*Speculations on Airworthiness and Operating Regulations. Edward P. Warner. (Reprint from S.A.E. Transactions, Feb., 1944.)* (Y.12.a.16.)

F.b.40.—Standard Methods for Testing Petroleum and its Products. (5th Ed.) Institute of Petroleum. 1944.

G.a.65 and 66.—A Metallurgical Study of German and Italian Aircraft. Aero Component Sub-Committee of the Special and Alloy Steel Committee. Kennedy Press, Ltd. 1943. 10/6. (Two copies.)

G.d.17.—White Metalling. H. Warburton. ("Mechanical World" Monographs, No. 17.) Emmott and Co., Manchester. 1944. 2/-. (PB.1/22.)

G.e.A.91.—Some Mechanical and Physical Properties of Hiduminium RR. 56. High Duty Alloys. 1944.

I.c.19.—*The Framework in n-Dimensions. Dr. H. Roxbee Cox. (Extract from "The Mathematical Gazette," 1944, p. 32.)* (PI.1/10.)

J.g.197.—Clouds and Weather Phenomena. C. J. P. Cave. Cambridge University Press. 1943. 5/-.

L.c.26.—The Flight Testing of Production Aircraft. J. A. Crosby Warren. Sir Isaac Pitman. 1944. 8/6.

L.k.41.—Physiology in Aviation. Chalmers L. Gemmill. Baillière, Tindall and Cox. 1943. 11/-.

S.c.11.—The Luftwaffe. C. G. Grey. Faber and Faber. 1944. 8/6.

J. LAURENCE PRITCHARD, *Secretary & Editor.*

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Professor G. T. R. Hill (Chairman), Mr. Griffith Brewer, Sir Roy Fedden, Mr. A. Gouge, Lieut.-Col. W. Lockwood Marsh, Mr. G. R. Volkert, Mr. C. C. Walker, Mr. L. A. Wingfield (Solicitor), Professor A. J. Sutton Pippard, Mr. H. E. Wimperis and Professor L. Bairstow.

Grading Committee:

Lord Sempill (Chairman), Mr. S. Camm, Dr. H. Roxbee Cox, Mr. E. C. Gordon England, Major F. B. Halford, Professor F. T. Hill and Dr. H. C. Watts.

Rules Committee:

Professor L. Bairstow (Chairman), Mr. S. Camm, Captain P. D. Acland, Mr. Griffith Brewer and Mr. H. E. Wimperis.

REPRESENTATIVES ON OTHER BODIES.

The following were appointed as the Society's Representatives on other bodies:—

Advisory Committee for Aeronautical Engineering of the City and Guilds of London Institute: Professor F. T. Hill and Captain J. Laurence Pritchard.

Advisory Council of the Science Museum: Lord Sempill.

Air League of the British Empire: Mr. W. O. Manning and Mr. Griffith Brewer.

Association of Special Libraries and Information Bureaux: Mr. J. E. Hodgson (Honorary Librarian).

British Standards Institution, Aircraft Committee: Major R. H. Mayo and Dr. H. C. Watts.

British Standards Institution, Committee on Symbols and Abbreviations Used in Engineering: Dr. H. Roxbee Cox.

British Standards Institution Technical Committee on Aircraft Nomenclature: Professor L. Bairstow, Captain J. Laurence Pritchard.

British Standards Institution, Units and Technical Data Committee: Lieut.-Col. W. Lockwood Marsh.

Engineering Joint Council: Mr. A. Gouge.

Engineering Joint Council, Special Educational Representative: Professor G. T. R. Hill.

The Guild of Air Pilots and Air Navigators of the British Empire, Sefton Brancker Memorial Fund Committee: Captain P. D. Acland.

Joint Standing Committee with the Society of British Aircraft Constructors and the Royal Aero Club: Mr. E. F. Relf, Lord Sempill, Lord Brabazon, Air Marshal Sir R. M. Hill, Mr. W. C. Devereux.

National Central Library: Mr. J. E. Hodgson (Honorary Librarian).

Professional Classes Aid Council: Lord Sempill.

Seagrave Memorial Fund Committee: Sir Richard Fairey.

Ministry of Labour, Engineering Advisory Committee: Sir Roy Fedden, Captain J. Laurence Pritchard.

Institution of Mechanical Engineers, National Certificates and Diplomas in Mechanical Engineering: Sir Roy Fedden and Professor F. T. Hill.

MEMBERSHIP.

The Membership of the Society for 1943 shows an increase over 1942 of over 800.

Applications for membership in the various grades have been greater this year than other years during the war period. Although many of them are from fully qualified engineers, scientists and research workers, a considerable number have been rejected under the rule which calls for five years' experience in aviation, for Associate Fellowship, and three years for Associateship.

The following table gives the present membership at December, 1943, exclusive of Branch membership:—

	Members.	Honorary and Life Members.	Suspended Members.	Grand Totals.
Fellows	216 (217)	25 (24)	1 (3)	242 (244)
Associate Fellows ...	1206 (1134)	7 (7)	40 (38)	1253 (1179)
Associates	740 (459)	5 (4)	32 (21)	777 (484)
Graduates	369 (214)	— —	11 (9)	380 (223)
Companions	169 (130)	9 (9)	10 (8)	188 (147)
Founder Members ...	16 (16)	1 (1)	— —	17 (17)
Students	885 (608)	— —	71 (47)	956 (655)
Temporary Honorary Members	—	19 (17)	— —	19 (17)
Totals	3601 (2778)	66 (62)	165 (126)	3832 (2966)

NOTE. Figures in brackets give the membership as at December, 1942

DONATIONS.

The Council have to thank the Society of British Aircraft Constructors for the nineteenth year for their grant of £250 to the Funds of the Society.

Many generous gifts have been received by the Society towards the Endowment Fund. In the report of the Council for 1939-1940 an account was given of the initiation of the Fund and its history and acknowledgment was made in the Journal for October, 1939, of the seven year gifts which enabled the Fund to make the remarkable progress it has done. The Fund this year stands at over £100,000.

The table below gives the progress of the Endowment Fund up to date.

	£	s.	d.
December, 1926	575	0	0
December, 1927	597	2	0
December, 1928	1,047	18	0
December, 1929	1,077	6	0
December, 1930	1,265	10	0
December, 1931	1,935	10	0
December, 1932	2,196	2	0
December, 1933	9,716	19	3
December, 1934	10,131	14	11
December, 1935	10,895	10	7
December, 1936	11,138	16	7
December, 1937	11,474	3	7
December, 1938	12,211	12	11
December, 1939	51,048	14	6
December, 1940	64,740	17	9
December, 1941	78,616	14	4
December, 1942	93,353	4	3
December, 1943	108,071	8	7

Annual General Meeting.

The following is an abbreviated report of the Annual General Meeting of the Society, held on Saturday, March 27th, 1943, in the Offices of the Society, at No. 4, Hamilton Place, London, W.1.

Present: Dr. H. Roxbee Cox (Vice-President) in the Chair.

E. J. Archbold (Graduate).
Miss A. Baden-Powell (Companion).
H. W. L. Calder (Associate).
J. Billingsloy (Associate).
J. E. Chorlton (Companion).
H. Delacombe (Companion).
D. L. Ellis (Fellow).
S. H. Evans (Fellow).
H. S. Green (Fellow).
F. T. Hill (Fellow).
S. Scott Hall (Associate Fellow).
J. E. Hodgson (Honorary Fellow).
D. Hilton-Grundy (Associate Fellow).
T. Haas (Associate Fellow).
J. Housego (Graduate).
G. Ingram (Associate).
A. N. Jackson (Associate Fellow).
R. E. Locke (Associate Fellow).
F. H. M. Lloyd (Associate Fellow).
R. Borlase Matthews (Fellow).
L. Mauer (Associate Fellow).
A. R. Pitt (Graduate).
S. J. Pope (Student).
E. Pribram (Associate Fellow).
F./Lt. J. Reed (Associate).
G. J. Richards (Associate Fellow).
Lt. (A.) E. Skelton (Associate Fellow).
Mrs. S. R. Walker Sinclair (Companion).
A. H. Tiltman (Fellow).
Dr. H. C. Watts (Fellow).
D. Whaley (Graduate).

The Chairman said the Meeting had before it the Annual Report of the Council and those present could make any observations upon it or any matter arising out of the Report.

Mr. S. H. Evans said he thought the Journal could be improved by giving less space to certain matter now appearing in it and publishing more articles.

The Secretary explained the difficulties due to the war situation and the necessity for secrecy and assured the meeting that immediately the war was over the Journal would be enabled to print a great number of valuable articles.

Mr. Scott Hall asked whether it was possible to resume the open meetings of the Society. The Chairman said he would raise the matter again at the Council and he agreed that there was now a better chance of some lectures being arranged than there was a year ago.

Mr. Archbold said he would like to ask the Council to make inquiries whether it would be possible for the Graduates and Students to pay visits to official establishments and works. The Chairman agreed to raise the matter in Council.

The Chairman said that under the new rules for election to Fellowship, these elections were made by the Council at their March meeting and the announcement of the names of those elected made at the Annual General Meeting. The following had been elected Fellows of the Society in the year 1942-1943:—

Frederick Francis Crocombe (Associate Fellow).
David Llewelyn Ellis (Associate Fellow).
Frederick Warren Merriam (Associate Fellow).
David Nicolson (Associate Fellow).
Roger Lander Ninnes (Associate Fellow).
Norbert Edward Rowe (Associate Fellow).

Arising out of that, Mr. Evans said he thought there were too many Fellows on the Council and there ought to be a greater number of Associate Fellows and Associates.

The Secretary said that under the Rules out of twenty-one members of Council only four need be Fellows. There was nothing in the Rules to stop the members electing all the rest from any other grades of the Society they wished. Mr. Evans expressed the opinion that a fixed number should be from the Associate Fellowship grade, but the meeting was not in agreement.

The Chairman announced that the following had been elected to serve on the Council for the years 1943-1945:—

Mr. A. C. Brown.
Mr. S. Camm.
Mr. S. H. Evans.
Major R. H. Mayo.
Mr. G. E. Petty.
Mr. N. E. Rowe.
Mr. A. E. Russell.
Sir Francis Shelmerdine.
Mr. Oliver E. Simmonds.
Mr. R. S. Stafford.

PRESIDENT.

Mr. A. Gouge, B.Sc., F.R.Ae.S., was elected President of the Society for the year October, 1943—September, 1944.

VICE-PRESIDENTS.

The following were elected Vice-Presidents of the Society for the year 1943-1944:—

Mr. E. F. Relf, F.R.S., F.R.Ae.S.
Dr. H. Roxbee Cox, D.I.C., B.Sc., F.R.Ae.S.

MEDALS AND AWARDS.

The Council again decided to make no awards for the year with the exception of the Elliott Memorial Prize and the Major Baden-Powell Memorial Prize, awarded as follows:—

Elliott Memorial Prize ...	...	Aircraft Apprentice J. D. Currell. Aircraft Apprentice C. H. Partridge.
Baden-Powell Memorial Prize ...		Mr. J. D. Harris. Mr. G. L. Gunstone.

HONOURS.

The following Members were recipients of Honours during the year:—

K.B.E.—Acting Air Marshal J. E. A. Baldwin, C.B., C.B.E., D.S.O., O.B.E., A.F.R.Ae.S., A.D.C.

C.B.E.—Group Captain P. W. S. Bulman, M.C., A.F.C., F.R.Ae.S.

C.B.E. (Military Division).—Acting Air Cmdre. K. L. Boswell, C.B.E., A.F.R.Ae.S.

O.B.E.—Wing Cmdr. E. A. Gibson, A.M.Inst.C.E., A.F.R.Ae.S.; E. T. Jones, A.F.R.Ae.S.; Captain A. C. P. Johnstone, A.R.Ae.S.

M.B.E.—F. C. Bray, A.R.Ae.S.; Flt. Lt. J. Healey, A.R.Ae.S.; D. A. G. Jones, A.F.R.Ae.S.; Flight Capt. A. F. Linguard, A.M.Inst.C.E., A.F.R.Ae.S.; W. A. Needs, A.R.Ae.S.

A.F.C.—Squadron Leader R. Alexander, A.F.R.Ae.S.

SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS SCHOLARSHIPS.

The Scholarship Selection Committee of the Society of British Aircraft Constructors and the Royal Aeronautical Society have made awards of Society of British Aircraft Constructors' Scholarships to the following:—

James Roy Combley.
Frederick Stanley Newson.
Albert Seaman.

WILBUR WRIGHT MEMORIAL LECTURE.

The 31st Wilbur Wright Memorial Lecture was delivered by Dr. E. P. Warner, Hon. F.R.Ae.S., entitled, "Performance and Economy in Transport Aircraft." A full report of the lecture was published in the Journal of the Society for July, 1943.

EDUCATION AND TRAINING OF AERONAUTICAL ENGINEERS.

On June 25th, 1943, a discussion was held on the Education and Training of Aeronautical Engineers. So much interest was taken in the discussion that a further meeting was held on July 23rd, 1943. A full account of the discussion was given in the October Journal and following them resolutions were forwarded to the Ministry of Labour, the Ministry of Aircraft Production, the Air Ministry and the Board of Education, giving a summary of the views of the meetings and enclosing copies of the Journal containing the discussions.

BRANCHES.

The outbreak of war severely curtailed the activities of Branches, but during this year a number have re-started lectures and other activities. It would help if members of the Society living in the respective neighbourhoods would contact the Honorary Secretary of their Branch with a view to taking part in the activities. If any member considers there is a demand for a Branch and one does not already exist in his particular neighbourhood, full particulars may be obtained from the Secretary on the formation of a Branch.

The Society has a number of Branches as follows:—

Australia.
Hon. Sec.: J. B. Mills, B.Sc., Graduate R.Ae.S.,
Science House, Gloucester and Essex Streets, Sydney, Australia.

Belfast.
Hon. Sec.: W. H. Hambrook, A.F.R.Ae.S.,
Short and Harland, Limited, Queen's Island, Belfast.

Bristol.
Hon. Sec.: S. G. Nash, A.F.R.Ae.S.,
The School House, Badminton, Glos.

Brough.
Hon. Sec.: S. J. Smyth, A.F.R.Ae.S.,
Blackburn Aircraft, Limited, Brough, East Yorks.

Cambridge University Engineering and Aeronautical Society (affiliated to the Royal Aeronautical Society).
Sec.: J. G. Lubbock, Trinity College.

Coventry.
Hon. Sec.: J. A. Beardsall, c/o Sir W. G. Armstrong Whitworth Aircraft, Ltd., Whitley, Coventry.

Gloucester and Cheltenham.
Hon. Sec.: F. B. Ford, A.F.R.Ae.S.,
Kendon, Churchdown Lane, Hucclecote, Glos.

Hatfield.
Hon. Sec.: H. W. L. Calder, A.R.Ae.S., de Havilland Aircraft Company, Limited, Hatfield, Hertfordshire.

Isle of Wight.
Hon. Sec: M. J. Brennan, A.F.R.Ae.S.

Luton.
Hon. Sec.: N. A. White, c/o D. Napier and Son, Ltd., Luton.

Manchester.
Hon. Sec.: J. E. A. Waterfall,
56, Manor Avenue, Ashton-on-Mersey, Cheshire.

Medway.
Hon. Sec.: J. W. Loader, A.F.R.Ae.S., 174, City Way, Rochester.

Montreal Aeronautical Section.
Address: Engineering Institute of Canada,
2050, Mansfield Street, Montreal, Canada.

Ottawa Aeronautical Section.
Hon. Sec.: M. S. Kuhring, A.R.Ae.S., National Research Council, Aeronautical Laboratory, Ottawa, Canada.

Portsmouth.
Hon. Sec.: C. J. King, Airspeed (1934), Limited,
The Airport, Portsmouth, Hants.

South Africa.
Hon. Sec.: Major G. A. Mann, A.F.R.Ae.S.,
24, Ostend Road, Germiston, South Africa.

Southampton.
Hon. Sec.: T. Tanner, A.C.G.I., D.I.C., A.F.R.Ae.S.,
University College, Southampton.

Weybridge.

Hon. Sec.: D. L. Ellis, F.R.Ae.S.,
Vickers (Aviation), Limited, Weybridge, Surrey.

Yeovil.

Hon. Sec.: L. A. Lansdown, A.F.R.Ae.S.,
Westland Aircraft Works, Yeovil, Somerset.

BRANCH PRIZE.

The Council offer an annual prize of twenty guineas for the best paper read before the Branches during the previous Lecture Session. The prize is open to any member of the Society or of a Branch.

GRADUATES' AND STUDENTS' SECTION.

The Graduates' and Students' Section of the Society had a successful year.

The Annual General Meeting of the Section was held on April 30th, 1943.

During the year the following meetings were held:—

11th May, 1943.—Joint meeting with Graduate Section, Institution of Automobile Engineers. Mr. M. D. Curwen, "Plastics."

16th June, 1943.—Dr. Barnes, F.I.C., F.R.P.S., "Application of Photography to Engineering."

14th July, 1943.—Mr. J. A. Oates, "Surface Finishing."

15th September, 1943.—Mr. J. Mellersh, "Aircraft Woods."

22nd September, 1943.—Sir Frederick Handley Page, C.B.E., Informal talk on "Aviation and Air Transport."

8th December, 1943.—Mr. K. G. Wilkinson, "Gliders and Gliding."

15th December, 1943.—Section discussion on "The Education and Training of the Aeronautical Engineer." Dr. H. Roxbee Cox in the chair.

The total attendance at these meetings was 400.

On October 16th-17th, 1943, a visit was paid to the Royal Aircraft Establishment.

On December 17th, 1943, by permission of the Council, the Section was able to hold its Annual Supper in the Offices of the Society. Dr. Roxbee Cox, Vice-President of the Society, and Mr. P. G. Masefield were the guests of the Section.

The Committee of the Section, following the discussion on Education on December 15th, 1943, arranged to send a report of the meeting to the Council of the Society and to Sir Roy Fedden's Education Committee.

The Rules of the Section are now under revision and will be discussed at the next Annual General Meeting of the Section.

The Committee of the Section wish particularly to thank those who have given assistance to the Section during the year, particularly Dr. Roxbee Cox, the Director, and others at the Royal Aircraft Establishment, Mr. J. W. E. Housego and the Staff of the Society.

ASSOCIATE FELLOWSHIP EXAMINATIONS.

The results of the Associate Fellowship Examinations held in May and December, 1943, were published in the Journal for July, 1943, and March, 1944. There is again a marked increase in the numbers of candidates taking the examination both in this country and various centres abroad. The Council view this increase with satisfaction, particularly in view of the difficulties created by the war.

MEMBERS ELECTED DURING 1943.

The names of members elected in the various grades of membership during 1943 have been published regularly in the Monthly Notices, now printed as part of the Journal, and circulated to all those who have foregone the Journal for the period of the war.

ACKNOWLEDGMENTS.

The Council gratefully acknowledge the gifts of books, photographs, historical papers and lantern slides from members during the year. All gifts have been acknowledged as received in the Monthly Notices.

COLLECTION OF AERONAUTICAL MEDALS.

Thanks to the generosity of an anonymous donor, the Royal Aeronautical Society acquired during the year a remarkable collection of aeronautical medals, over 300 in number, dating from 1714 to 1941. The medals are a veritable history of aeronautics, struck on the occasion of some aeronautical event.

Among the many medals which have been acquired it is possible to select only a few to give some idea of their range.

Three of the early medals were struck in 1783 to commemorate the first ascent of the Montgolfier Brothers in a hot air balloon; two others show the first ascent of Lunardi from London in 1784; another the first Dutch aeronaut to ascend, from Amsterdam, in 1806. James Sadler, the first Englishman to make an ascent, is commemorated in a medal dated 1811. A silver medal of 1851 shows the ascent of three balloonists each on a horse! There are many examples of the Siege of Paris medals of 1870, Giffard's ascent and others. A bronze medal of 1896 shows the Andree polar balloon, and several silver ones of 1901 Santos Dumont's dirigible.

There are medals to the brothers Wright; medals of various Zeppelins, Parseval, the R.101, and other dirigibles; medals commemorating Bleriot's Cross-Channel flights, 1909; the flights of Paulhan (London-Manchester, 1910); Chavez (crossing the Alps, 1910); Pegoud (the first to loop the loop); Lindbergh (Trans-Atlantic flight, 1927); Bert Hinkler (London to Australia, 16 days, 1928); Kohl, Hunefeld and Fitzmaurice (Ireland to America, first east-west flight, 1928); Mussolini—Chief Airman (6th year of Facism, 1928-1929); Dornier D.O.X. Flying Boat, then largest in the world, 1929; Professor Picard and Dr. Kipfer, first Stratosphere ascent, 1931; Balbo's Armada of 24 seaplanes—Italy to America and back, 1933; and Amelia Earhart (1941).

HONORARY FELLOWSHIP.

The Council elected Dr. E. P. Warner an Honorary Fellow of the Society on May 27th, 1943. The Society has elected only 18 Honorary Fellows in the 78 years of its existence.

FINANCE.

The Income and Expenditure Accounts and Balance Sheets of Aerial Science Limited, and Aeronautical Trusts, Ltd., for 1943, are published in the Journal with this report.

The Income and Expenditure Account of Aerial Science Ltd. shows an excess of expenditure over income for the year of £302 19s. 3d., as against an excess of income over expenditure for the year 1942 of £1,050 18s. 7d.

JOURNAL.

The steadily increasing paper shortage and increasing labour and paper costs have had their effect on the Journal accounts. This effect would have been

(*continued on page 90.*)

THE ROYA

(Aer

Balance She

	£ s. d.	£ s. d.
Share Capital—		
Authorised—		
20 Shares of 1/- each	1 0 0	
999 Shares of £1 each	999 0 0	
	1000 0 0	
Issued—19 Shares of 1/- each, fully paid...	... ...	19
Sundry Creditors	... ...	1979 4
Amount due to Aeronautical Trusts, Ltd.—		
Royal Aeronautical Society Endowment Fund	... ...	4083 11
Subscriptions and Other Amounts Received in Advance	... ...	1206 16
Staff Pension Fund	... ...	2773 10
Income and Expenditure Account—		
Balance at 31st December, 1942	3780 15 4	
Less—Excess of Expenditure over Income for year to date ...	302 19 3	3477 16
		£13521 17

We report to the Members that we have examined the above Balance Sheet with the Bo
are of the opinion that the Balance Sheet is properly drawn up so as to exhibit a true and corr
information and the explanations given to us and as shown by the Books of the Society.

3, Frederick's Place, Old Jewry, London, E.C.2.
6th March, 1944.

Income and Expenditure Accou

	£ s. d.	£ s. d.	£ s. d.	£ s.
				1942 Figs.
To Establishment Expenses—				
Ground Rent, Heating, Lighting and Insurance			1482 14 1	(1531 17
,, Office and Staff Expenses—				
Salaries	2526 9 3			(2463 13
Printing and Stationery	622 17 5			(565 2
Postages and Telephone	401 17 0			(340 10
Other Charges	955 12 10	4506 16 6		(966 12
				(4335 19
,, JOURNAL and Sundry Publications—				
Printing Costs	3740 13 9			(3234 4
Special Publications	750 0 0			—
Postages	340 5 5			(320 12
Other Charges	350 16 0			(252 9
	5181 15 2			(3807 6
Less—Sales 1551 7 7				(1590 14
Advertisement Revenue 3040 0 2	4591 7 9	590 7 5		(3230 15
				Profit
				(1014 2
,, Meetings		36 0 10		(162 9
,, Library Expenses		361 18 0		(74 11
,, Prizes and Donations		5 5 0		(5 5
,, Legal and Professional Charges		76 13 0		(132 13
,, Staff Pension Fund		500 0 0		(500 0
				(Surplus of Inc over Expendi
				1050 18
		£7559 14 10		

W. C. DEVEREUX, Chairman, Finance Comm
A. N. D. SMITH, Honorary Accountant.

AERONAUTICAL SOCIETY

(Aeronautical Science Limited)

31st December, 1943.

£ s.		£ s. d.	£ s. d.
	Printed Books, Bindings, Old Prints, etc., at cost, less amounts written off		50 0 0
	Stock of JOURNALS *and other Publications*		1 0 0
	Investment in Subsidiary Company—		
	Aeronautical Trusts Limited—		
	21 Shares of 1/- each, fully paid, at cost		1 1 0
	Staff Pension Fund—		
	Investments, at cost—		
1979 4	£2335 10s. 7d. 2½ % Funding Loan, 1956/61	2201 4 2	
	£550 0s. 0d. 3 % Savings Bonds, 1960/70	550 0 0	
4083 11		2751 4 2	
1206 16	Cash at Bank	22 5 10	2773 10 0
2773 10			
	Investment at Cost—		
	£4000 0s. 0d. 3 % Savings Bonds, 1960/70	... ...	4000 0 0
3477 16	*Sundry Debtors*	... ...	1705 9 5
	Insurance paid in advance	... ..	75 10 1
	Cash at Bank and in Hand	... ...	4915 7 2
£13521 17			£13521 17 8

the Society, and have obtained all the information and explanations we have required. We
ith the Bo iew of the state of the Society's affairs as at 31st December, 1943, according to the best of our
ue and corr
ety.

(Signed) PRICE, WATERHOUSE & CO.

Accou*nt for the Year ending 31st December, 1943.*

£ s.		£ s. d.	£ s. d.	£ s. d.
1942 Figs.				1942 Figures
(1531 17	By Annual Subscriptions	... ...	6806 3 3	(6149 9 9)
	,, Donation	... ...	250 0 0	(500 0 0)
(2463 13	,, Interest on Investment	... ...	28 15 4	—
(565 2	,, Examinations—			
(340 10	Fees Received	436 19 0	—	(348 7 0)
(966 12	*Less* Expenses	265 2 0	171 17 0	(218 6 9)
(4335 19				
(3234 4				(130 0 3)
(320 13	,, Balance, being Excess of Expenditure over Income for year carried to Balance Sheet	... ...	302 19 3	
(252 9				
(3807 6				
(1590 14				
(3230 13				
Profit				
(1014 2				
(162 6				
(74 11				
(5 5				
(132 13				
(500 0				
plus of Inc				
r Expendit				
1050 18				
			£7559 14 10	

ce Comm
nt.

AERONAUTICAL

Balance Sheet,

	£ s. d.	£ s. d.	£ s. d.
Share Capital—			
Authorised—40 Shares of 1/- each		2 0 0	
Issued—21 Shares of 1/- each fully paid			1 1 0
Royal Aeronautical Society Endowment Fund—			
Capital Account—Balance at 31st December, 1942 ...		91348 2 9	
Add Donations received during year		12360 12 11	
Entrance Fees received during year		730 16 0	
		104434 11 8	
Income Account—Balance at 31st December, 1942 ...	2010 1 6		
Add—Surplus of Income over Expenditure for year to date	1626 15 5	3636 16 11	108071 8 7
Pilcher Memorial Fund—			
Capital Account—As at 31st December, 1942		99 14 0	
Income Account—Balance at 31st December, 1942 ...	43 9 0		
Add Income for year to date	4 0 8	47 9 8	147 3 8
Usborne Memorial Fund—			
Capital Account—As at 31st December, 1942		109 2 5	
Income Account—Balance at 31st December, 1942 ...	60 4 0		
Add—Income for year to date	3 19 0	64 3 0	173 5 5
Herbert Akroyd Stuart Fund—			
Capital Account—As at 31st December, 1942		688 19 0	
Income Account—Balance at 31st December, 1942 ...	332 1 5		
Add Income for year to date	31 8 0	363 9 5	1052 8 5
R.38 Memorial Fund—			
Capital Account—As at 31st December, 1942		978 3 10	
Income Account—Balance at 31st December, 1942 ...	566 13 3		
Add Income for year to date	47 3 10	613 17 1	1592 0 11
Edward Busk Memorial Fund—			
Capital Account—As at 31st December, 1942		449 6 1	
Income Account—Balance at 31st December, 1942 ...	141 3 11		
Add Income for year to date	19 14 0	160 17 11	610 4 0
Wilbur Wright Memorial Fund—			
Capital Account—Balance at 31st December, 1942 ...		1420 7 9	
Add Donations received during year		251 1 0	
		1671 8 9	
Income Account—Balance at 31st December, 1942 ...	150 14 1		
Add Surplus of Income over Expenditure for year to date	9 5 10	159 19 11	1831 8 8
Simms Gold Medal Fund—			
Capital Account—Balance at 31st December, 1942 ...		324 15 9	
Add Donation received during year		200 0 0	
		524 15 9	
Income Account—Income for year to date	9 1 7		
Less—Deficiency at 31st December, 1942	6 2 10	2 18 9	527 14 6
Alston Memorial Fund—			
Capital Account—As at 31st December, 1942		245 6 0	
Income Account—Balance at 31st December, 1942 ...	15 3 1		
Add—Income for year to date	7 11 6	22 14 7	268 0 7
			£114274 15 9

We report to the Members of Aeronautical Trusts Limited, that we have examined the above explanations we have required. We are of opinion that the Balance Sheet is properly drawn up December, 1943, according to the best of our information and the explanation given to us and as

3, Frederick's Place, Old Jewry, London, E.C.2.
6th March, 1944.

TRUSTS LIMITED

31st December, 1943.

	£ s. d.	£ s. d.
Cash in Hand		1 1 0
Royal Aeronautical Society Endowment Fund—		
Leasehold Property at Cost—Less amounts written off		
4, 8, and 9, Hamilton Place	9700 0 0	
Furniture at cost, *less* depreciation	3313 2 6	
Investments at Cost—	£ s. d.	
£6474 11s. 7d. 3½ % Conversion Stock	6192 5 1	
£4500 3 % War Loan, 1955/59	4497 0 2	
£15103 15s. 3d. 3½ % War Loan	14000 0 0	
£10000 2½ % National War Bonds, 1945/47	10000 0 0	
£1000 3 % Defence Bonds	1000 0 0	
£18500 3 % Savings Bonds, 1955/65	18500 0 0	
£21000 3 % Savings Bonds, 1960/70	21000 0 0	
£629 16s. 4d. London County Council 2½ % Stock, 1960/70	600 0 0	
£2367 12s. 7d. Manchester 3 % Redeemable Stock, 1952/55	2388 12 11	
£4100 L.N.E. Rly. 3 % Debenture Stock	3162 6 3	
£3100 L.M.S. Rly. 4 % Debenture Stock	3162 19 9	84503 4 2
Cash at Bank		1687 11 10
Amounts due for refund of Income Tax, etc.		4783 18 2
Amount due from Aerial Science Limited		4083 11 11 108071 8 7
Pilcher Memorial Fund—		
£115 6s. 10d. 3½ % War Loan at cost	116 5 0	
Cash at Bank	30 18 8	147 3 8
Usborne Memorial Fund—		
£113 3½ % War Loan at cost	114 11 1	
Cash at Bank	58 14 4	173 5 5
Herbert Akroyd Stuart Fund—		
£683 1s. 0d. 3½ % War Loan at cost	698 19 0	
£250 3 % Defence Bonds at cost	250 0 0	
	948 19 0	
Cash at Bank	103 9 5	1052 8 5
R.38 Memorial Fund—		
£1048 11s. 2d. 3½ % War Loan at cost	1098 18 10	
£350 3 % Defence Bonds at cost	350 0 0	
	1448 18 10	
Cash at Bank	143 2 1	1592 0 11
Edward Bush Memorial Fund—		
£284 4s. 2d. 3½ % War Loan at cost	284 4 2	
£217 London Transport 4½ % "A" Stock, at cost	199 4 6	
	483 8 8	
Cash at Bank	126 15 4	610 4 0
Wilbur Wright Memorial Fund—		
£1246 18s. 1d. 3½ % Conversion Stock, at cost	1000 0 0	
£530 2½ % National War Bonds, 1945/47, at cost	530 0 0	
£250 3 % Savings Bonds, 1960/70, at cost	250 0 0	
	1780 0 0	
Cash at Bank	51 8 8	1831 8 8
Simms Gold Medal Fund—		
£300 3% Defence Bonds, at cost	300 0 0	
£200 3 % Savings Bonds, 1960/70, at cost	200 0 0	
	500 0 0	
Cash at Bank	27 14 6	527 14 6
Alston Memorial Fund—		
£252 14s. 10d. 3 % War Loan 1955/59 at cost	250 0 0	
Cash at Bank	18 0 7	268 0 7
		£114274 15 9

Balance Sheet with the books of the Company and have obtained all the information and so as to exhibit a true and correct view of the state of the Company's affairs as at 31st shown by the books of the Company.

(Signed) PRICE, WATERHOUSE & CO.

AERONAUTICAL

INCOME & EXPENDITURE ACCOUNTS

Royal Aeronautical Society

	£	s.	d.
To Legal Charges	4	4	0
,, Amortisation of Leasehold Property	485	0	0
,, Depreciation of Furniture	213	15	0
,, Surplus of Income over Expenditure for year carried to Balance Sheet	1626	15	5
	£2329	14	5

Pilcher

To Income for year carried to Balance Sheet...	4	0	8
	£4	0	8

Usborne

To Income for year carried to Balance Sheet...	3	19	0
	£3	19	0

Herbert Akroyd

To Income for year carried to Balance Sheet	31	8	0
	£31	8	0

R.38

To Income for year carried to Balance Sheet	47	3	10
	£47	3	10

Edward Busk

To Income for year carried to Balance Sheet...	19	14	0
	£19	14	0

Wilbur Wright

To 1943 Award	50	0	0
,, Surplus of Income over Expenditure for year carried to Balance Sheet	9	5	10
	£59	5	10

Simms Gold

To Income for year carried to Balance Sheet	9	1	7
	£9	1	7

Alston

To Income for year carried to Balance Sheet...	7	11	6
	£7	11	6

TRUSTS LIMITED

FOR THE YEAR ENDED 31st DECEMBER, 1943.

Endowment Fund.

	£ s. d.
By Interest on Investments (gross)	1367 11 0
,, ,, ,, ,, (*less* Tax)...	496 10 4
,, Refund of Income Tax	465 13 1
	£2329 14 5

Memorial Fund.

	£ s. d.
By Interest on Investments (gross)	4 0 8
	£4 0 8

Memorial Fund.

	£ s. d.
By Interest on Investments (gross)	3 19 0
	£3 19 0

Stuart Fund.

	£ s. d.
By Interest on Investments (gross)	31 8 0
	£31 8 0

Memorial Fund.

	£ s. d.
By Interest on Investments (gross)	47 3 10
	£47 3 10

Memorial Fund.

	£ s. d.
By Interest on Investments (gross)	9 18 10
,, ,, ,, ,, (*less* Tax)	4 17 8
,, Refund of Income Tax	4 17 6
	£19 14 0

Memorial Fund.

	£ s. d.
By Interest on Investments (gross)	56 17 8
,, ,, ,, ,, (*less* Tax)	2 2 10
,, Refund of Income Tax	0 5 4
	£59 5 10

Medal Fund.

	£ s. d.
By Interest on Investments (gross)	9 1 7
	£9 1 7

Memorial Fund.

	£ s. d.
By Interest on Investments (*less* Tax)...	3 15 10
,, Refund of Income Tax	3 15 8
	£7 11 6

greater if following the announcement by the Council of reduced subscriptions to those members who were prepared to give up their Journal for the war period, the response of the members had not been as great as it was. Over 750 members have generously foregone their Journals, and the Council wish particularly to place on record their thanks for the real help members have given in this way. The greatly increased membership of the Society during the past year has to some extent offset the benefit obtained from the reduction, however, and the circulation of the Journal is actually greater than it was in 1942.

The advertisement revenue has decreased owing to the restriction placed by the Government on advertisement space and the printing costs have increased over 1942. In the Journal Accounts is an item of £750 for special printing of which it will not be possible to give particulars until after the war. Without this item, despite other increases, the Journal shows an excess of income over expenditure, which must be considered satisfactory.

The Income and Expenditure Account of Aerial Science Ltd., gives a summary of the expenditure on the Journal and other publications. The Income and Expenditure Account is as follows:—

INCOME AND EXPENDITURE ACCOUNT OF THE JOURNAL.

Figures in brackets are corresponding figures for 1942.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Printing Costs ...	3740 13 9	(3234 4 9)	Sales	1551 7 7	(1500 14 5)
Special Publications	750 0 0	—	Advertisement Revenue ...	3040 0 2	(3230 15 5)
Postages... ...	340 5 5	(320 12 4)	Excess of Expenditure over Receipts	590 7 5	
Other Charges ...	350 16 0	(252 9 10)			
		(Excess of Receipts over Expenditure £1014 2s. 11d.			
	£5181 15 2	(£4821 9 10)		£5181 15 2	(£4821 9 10)

OFFICERS AND COMMITTEES OF THE SOCIETY.

The Council wish to place on record their appreciation of the work which has been carried out by the Honorary Officers of the Society during the year.

Captain A. G. Lamplugh, F.R.Ae.S., the Honorary Treasurer, has given invaluable advice and help on financial matters.

Mr. A. N. D. Smith, who completes his 16th year as Honorary Accountant, has continued to advise the Society, particularly on the difficult problems of income tax which have arisen.

Mr. J. E. Hodgson, Honorary Librarian for so many years, has again during the year 1943 continued to advise the Society on all matters pertaining to the Library.

The Council wish particularly to place on record their appreciation of the work of the various Committees. Much of the work being carried out by certain of the Committees has involved many meetings during the year and the results which they have achieved will prove of very great value to the Society.

STAFF.

The Council wish to place on record their appreciation of the services of the staff, upon whom has fallen an added responsibility for the work of the Society during the war. Much of that work is of a secret nature and it will not be possible to give details of the varied activities of the Society until the end of the war. The Society has a number of important Committees which are actively concerned with the war effort and the results of their work have already proved

of great value. The Society has also been able to arrange important meetings on war problems of which no account may yet be given, but which have proved invaluable in many directions and added greatly to the Society's prestige.

In addition to their normal duties the staff are responsible for Fire Guard and Civil Defence duties.

OBITUARIES.

The Council record with their deep regret the deaths of the following members since the publication of the last Report:—

*Capt. T. Allitt (Associate).
F. P. H. Beadle (Fellow).
H. Beamish (Fellow).
L. F. G. Butler (Fellow).
*H. St. G. Burke (Associate Fellow).
*W./Cmdr.. H. R. Carefoot (Associate Fellow).
*P./O. P. S. Champion-Jones (Student).
W. F. Cooper (Student).
*E. R. Davidson (Associate Fellow).
A. L. Dimmock (Associate Fellow).
*R. Holden (Associate).
L. S. Horner (Companion).
*W./Cmdr. D. V. Ivins (Associate).
*W./Cmdr. R. C. Jordan (Associate Fellow).
A. V. Kilburn (Associate Fellow).
*S./Ldr. H. Ledger (Associate Fellow).
*H. M. D. Magill (Student).
M. F. Magill (Associate Fellow).
R. Borlase Matthews (Fellow).
Major H. Myers (Fellow).
Flt. Lt. A. W. J. Norbett (Associate).
*Sir Nigel Norman (Fellow).
*Lieut. G. P. L. Pardoe (Associate Fellow).
R. F. R. Pierce (Companion).
*Captain W. F. G. Reynolds (Graduate).
*J. F. H. Scrope (Student).
*Cmdr. J. B. Taylor (Associate Fellow).
*D. Thomas (Student).
*Dr. H. C. H. Townend (Fellow).
*Flt. Sgt. J. M. Townsend (Student).

*Killed on War Service or by enemy action.

CORRESPONDENCE.

THE WRIGHT TRILOGY.

To the Editor of the JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

DEAR SIR,—Forty years ago Wilbur and Orville Wright accomplished the demonstration of their invention of the aeroplane, the result of their scientific work in their wind tunnel, combined with their experiments on gravity driven controlled glides down Kill Devil Hill at Kitty Hawk on the great sand barrier which skirts the North Carolina coast and protects it from the Atlantic.

At that time one could only reach Kitty Hawk and the slowly travelling Kill Devil Hill by crossing to that lengthy natural breakwater by boat from Elizabeth City or from one of the fishing ports on the mainland. To-day there is a causeway which runs across the shallow intervening water to where the National Lighthouse Monument has since been built on Kill Devil Hill, now permanently fixed by anchoring the hill against the erosion of the sand by wire stays in the ground and vegetation planted on its surface.

Fred Kelly, who has recently written the authorised biography of " The Wright Brothers," has with his great journalistic ability recounted some of Orville Wright's observations in the New York *Herald Tribune* of 2nd November, 1943, and has brought out features of the great discovery in a form which should be permanently recorded. THE JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY has already placed on record so much of the work of these pioneers in flying, that the history of flying would be enriched by the addition of these observations. I am therefore taking the opportunity of quoting below some of Orville Wright's answers to Kelly's questions, for although I have known these facts for many years, I have not had the journalistic wit to record them in such clear fashion, and I would take this opportunity of thanking Mr. Kelly for his ingenuity in clarifying the history in the American press. One of the questions Kelly put to Orville Wright was—which did he consider the greatest single contribution of the Wright brothers towards successful flight? Was it devising a mechanism to present the right and left wings at different angles to the wind to get sideways balance? Orville's reply was characteristic of the man:—

" First of all it was necessary to have a machine that would litt itself. There was no need of a system of control until one was able to get a machine into the air. Indeed, it would have been possible in 1903 for us to build a machine and fly it in calm air without our system of control—though of course such a machine could not have had any practical use. But without knowledge of how to build wings of the right shape—that is, of a shape to give more lift for the amount of power expended than had been possible before—we could not have flown at all. Except for what we learned from our wind tunnel experiments in 1901 we never could have built wings that would lift the machine and a pilot, with the amount of motor power then available. So, answering your question, for the first flight the system of control was less important than the knowledge of how to build wings of the right shape. But to-day, for the practical aeroplane, the two are about equally important. To try to distinguish between the value of these two features now would be like trying to determine whether the chicken or the egg should have precedence."

Kelly then asked him whether there was any time during their experiments when they felt greatly discouraged, to which Orville replied:—

" When we discovered in 1901 that tables of air pressures prepared by our predecessors were not accurate or dependable, that was discouraging, in a way,

and disappointing. For it meant that instead of starting from where others had left off, we must start from scratch. But, on the other hand, the fact that these data which others had considered accurate now turned out to be inaccurate, was interesting. One gets a certain thrill from discovering something others have not known. From one way of looking at it, you might even have called it encouraging, that the data others had used could not be relied upon. It suggested that maybe the reason others had failed to fly was not because the thing couldn't be done."

This is the finest explanation I have ever seen of the clear reasoning which guided the Wrights in achieving flight. Readers of the JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY all know how the balance of the machine was attained by differential adjustment of the angles of the ends of the wings, combined with the use of a vertical rudder. This method of control was the second stage of the invention in gliding down Kill Devil Hill, but which would never have been required had the first step of wind tunnel experiments not been carried through so precisely, in truly scientific manner, in their hundreds of miniature wing tests.

Up to this point they knew that they could fly and balance, if they could push the machine through the air, and so the third step in the production of the successful flying machine was the design of propellers which would utilise the power of the engine to produce efficient propulsion.

So here we have the Wright Trilogy, each step separate but so inter-related as to form one great achievement.

The question that Kelly naturally asks Orville, is what he thinks of the use that man has put his invention to, in the world of war, and he enquires what are Orville's feelings about the use of the aeroplane as an instrument of destruction and human slaughter. " Do you ever wish you had never invented it?" says Kelly. " No," Mr. Wright replies promptly. " I don't have any regrets about my part in the invention of the aeroplane, though no one could deplore more than I do the destruction it has caused. I feel about the aeroplane much the same as I do in regard to fire. That is, I regret all the terrible damage caused by fire. But I think it is good for the human race that someone discovered how to start fires and that we have learned how to put fire to thousands of important uses. At the time we flew our power-plane at Kitty Hawk, we were not thinking of any practical uses for it at all. We just wanted to show that it was possible to fly. But we saw that the machine could be useful for military purposes, especially for scouting. As early as January, 1905, we had enough faith in its military uses to offer it to the United States Government, but our War Department did not then show any interest in it. We thought observations from scouting planes could prevent surprise attack by an enemy. We saw, too, that it would be possible to drop bombs on enemy territory. And we hoped that no government would want to risk starting a war and subjecting its people to the kind of devastation the aeroplane could inflict. One thing we particularly believed might prevent wars was the opportunity the aeroplane provided promptly to drop bombs on the buildings occupied by the members of parliament and highest government officials, or rulers, of the country that declared war. We thought the plane might thus make war so inadvisable that no government would dare to start one."

Kelly follows up his question by enquiring whether Orville thought that the plane would create the world revolution it has, or that there would be night bombings from bases hundreds or even thousands of miles away, to which Orville replied :—

" No, we didn't even suppose anyone would ever fly or make landings at night. Nor did we reckon with the amount of punishment human beings seem able to endure. It never occurred to us that if a fanatical leader, for purposes of personal aggrandisement, should start a war, his people would put up with

terrible suffering year after year without mass protest. Of course, the German people were doubtless led to accept the assurance of their leaders that the war would be fought on foreign soil with no bombings on their own cities. Perhaps the danger of bombings may cause even Germans to think twice before getting into another war."

May I add to Kelly's question by enquiring from Orville Wright, "What steps should be taken to prevent the aeroplane being used for human destruction in the future?" I am sure the Royal Aeronautical Society would welcome his reply with gratitude.

GRIFFITH BREWER.

15th March, 1944.

REVIEWS.

THE FLIGHT TESTING OF PRODUCTION AIRCRAFT.

J. A. Crosby Warren. Sir Isaac Pitman and Sons, Ltd. 1943. 8/6.

This book, appropriately dedicated to the late "Gerry" Sayer, is particularly welcome, in view of the small amount of literature on the subject and the increasing number of pilots who are engaged in testing production aircraft. The author, himself a test pilot, has a thoroughly workmanlike attitude towards his job. He starts by pointing out that the production test pilot, far from being the emotional and erratic aerobatic genius so often presented to us by film producers, is merely an "average or better" pilot with an analytical mind and a capacity for small detail. His job is not so much to prove the safety of an aeroplane—which nowadays is rarely in doubt—as to apply a large number of detail tests, analyse and report any faults that come to light, and finally to prove that they have been cured. In wartime, a reasonable compromise must be made between the highest practical standard and an adequate rate of production. The tests are classified under the following headings:—Airframe and controls; engine and airscrew; ancillary equipment (including retractable undercarriages and hydraulic, electric and pneumatic services); instruments; general tests for condition of aircraft after storage or shipment; suitable tests for civilian aircraft (flying clubs, schools, etc.). A table in the Appendix gives a quick method of reducing observed performance figures to corrected results in standard atmosphere. No doubt when the war is over there will be a fresh edition of this book, more lavishly illustrated and with additional details that cannot be released at present, but this first edition will undoubtedly be appreciated both by the pilots themselves and by factory managements.

CIVIL AVIATION.

Michael Young. ("Target for To-morrow" Series, No. 7.) The Pilot Press. 1944. 4/6.

In their excellent "Target for To-morrow" series, dealing with post-war planning, the Pilot Press are demonstrating that a book may be "popular"—*i.e.*, pleasant reading for the general public—and at the same time intelligently written and well presented. The present volume, after a brief historical survey and some guesses as to the probable future trends of aviation, is mainly devoted to a discussion of British post-war policy, as expressed in the S.B.A.C. memorandum: "The Future of British Air Transport," the Lamplugh Committee Report, etc. The "Target," succinctly set out at the end of the book, certainly offers matter for discussion; it may be resumed as follows: Establishment of World Airways to operate all European and Far Eastern air lines, and the main international trunk routes; an International Board to lay down common standards for those routes not covered by World Airways; B.O.A. to continue to operate British overseas air services; Civil Aviation to be transferred from the Air Ministry to the Ministry of Transport.

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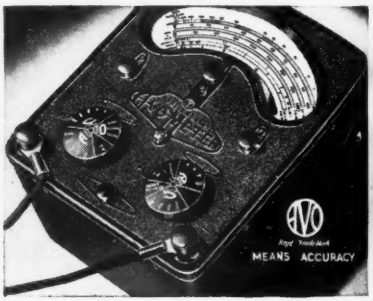

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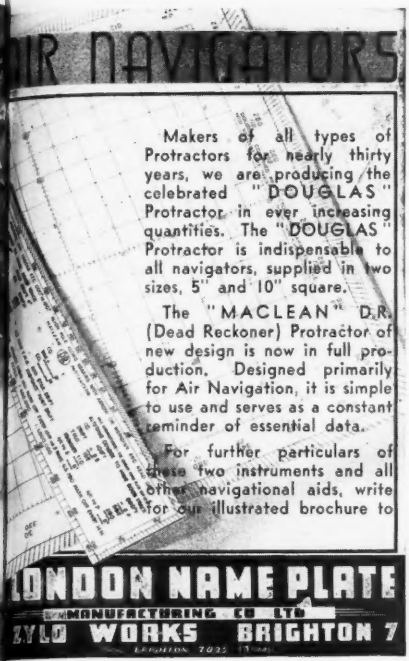

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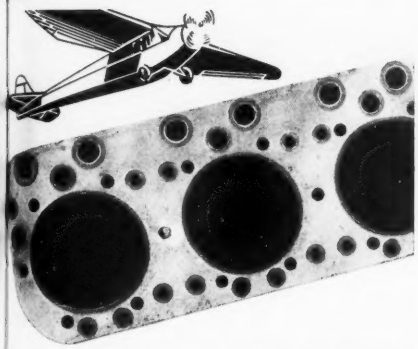

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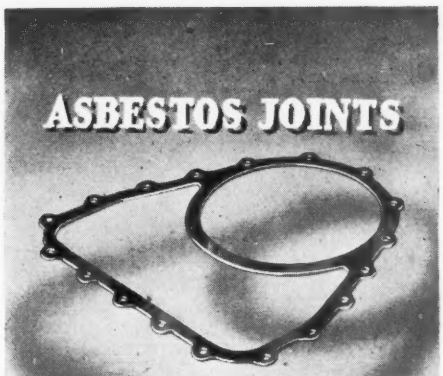

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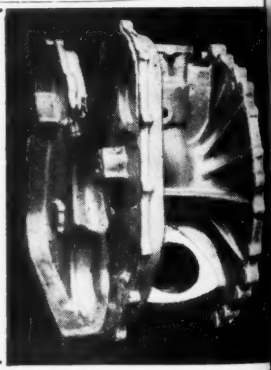

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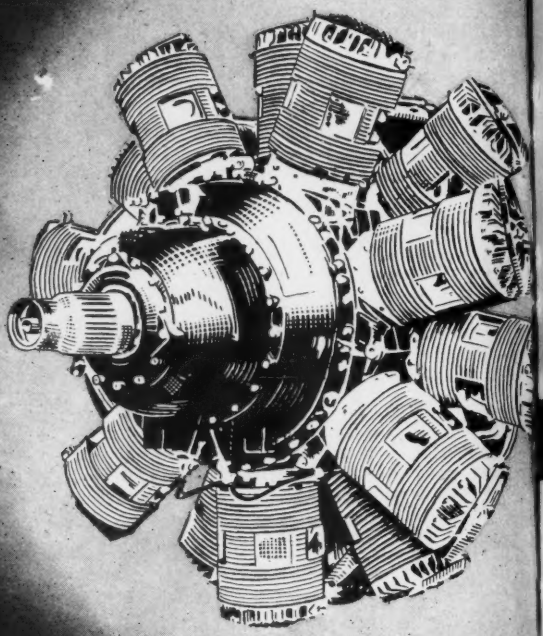

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